

VessRAID

1000f, 1000i, 1000s Series

Architectural & Engineering Specification

For Video Surveillance



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This document is created as a reference guide for Promise Technology's partners specialized in video surveillance areas. The document is subject to change without notice.

Table of Contents

<i>Copyright</i>	2
<i>Trademarks</i>	2
Table of Contents	3
SMB Storages for Midrange Video Surveillance	4
1. General Information	4
1.1 VessRAID 1000f Series	4
1.2 VessRAID 1000i Series	4
1.3 VessRAID 1000s Series	5
2 NAS Features	6
2.1 VessRAID 1000f Series	6
2.2 VessRAID 1000i Series	6
3 Operational Features	7
3.1 VessRAID 1000f/1000i/1000s Series	7
4 Management Features	7
4.1 Operating Systems Compatibility	7
4.2 Management Tools	8
4.3 Management Interfaces and Protocols	9
4.4 Event Notification	9
5 System Architecture	9
5.1 Mechanical Specification	9
5.2 Environmental Directives & Requirements	9
6 Warranty	10
6.1 Limited Warranty	10
6.2 Disclaimer of Other Warranties	10
6.3 Spare Parts Warranty	11

SMB Storages for Midrange Video Surveillance

1. General Information

1.1 VessRAID 1000f Series

- a. The storage system shall be a unified storage platform that is capable of handling file-based network attached storage (NAS) and block-based storage area network (SAN) storage in a single box.
- b. The storage system shall provide Fiber Channel SAN, iSCSI SAN, and NAS connectivity.
- c. The storage system shall be a standard 19" 3U rack mount chassis with 16 disk drives support (3.5").
- d. The storage system shall allow a mixed use of SAS/SATA (6Gb/s or 3Gb/s) disk drives within the same chassis.
- e. The storage system shall provide 2 ports of Fiber Channel 8Gbps and 2 ports of Gigabit Ethernet support for security devices access including DVRs, NVRs, or VMS servers to record, playback, and archive surveillance video.
- f. The storage system shall be designed with 1 port of SAS wide (x4) connectivity for expansion that allows user to grow video capacity as needed.
- g. The storage system shall be easy to scale up to 224TB through connections with multiple expansion JBOD enclosures.
- h. The storage system shall support up to 2GB controller memory for data cache.
- i. The storage system shall be able to install battery backup unit with the goal of keeping surveillance video data in memory for at least 72 hours when system power loss.
- j. The storage system shall comply with Fiber Channel, iSCSI, and CIFS/NFS protocol standards.
- k. The storage system shall use a queue limit up to 1024 packets.

1.2 VessRAID 1000i Series

- a. The storage system shall be a unified storage platform that is capable of handling file-based network attached storage (NAS) and block-based storage area network (SAN) storage in a single box.
- b. The storage system shall provide iSCSI SAN and NAS connectivity.
- c. The storage system shall be a standard 19" 2U or 3U rack mount chassis with 8, 12 and 16 disk drives support (3.5").
- d. The storage system shall allow a mixed use of SAS/SATA (6Gb/s or 3Gb/s) disk drives within the same chassis.

- e. The storage system shall provide 4 ports of Gigabit Ethernet support for security devices access including DVRs, NVRs, or VMS servers to record, playback, and archive surveillance video.
- f. The 2U-12 bay and 3U-16 bay storage system shall be designed with 1 port of SAS wide (x4) connectivity for expansion that allows users to grow video capacity as needed.
- g. The storage system shall be easy to scale up to 224TB through connections with multiple expansion JBOD enclosures.
- h. The storage system shall support up to 2GB controller memory for data cache.
- i. The storage system shall be able to install battery backup unit with the goal of keeping surveillance video data in memory for at least 72 hours when system power loss.
- j. The storage system shall comply with iSCSI and CIFS/NFS protocol standards.
- k. The storage system shall use a queue limit up to 1024 packets.

1.3 VessRAID 1000s Series

- a. The storage system shall be a standalone storage array platform with redundant power module and cooling designed to work with NVRs, DVRs, and VMS servers for security environments.
- b. The storage system shall provide SAS wide (x4) connectivity over mini-SAS (SFF-8088) cable.
- c. The storage system shall be a standard 19" 2U or 3U rack mount chassis with 12 and 16 disk drives support (3.5").
- d. The storage system shall allow a mixed use of SAS/SATA (6Gb/s or 3Gb/s) disk drives within the same chassis.
- e. The storage system shall provide 2 ports of SAS 12Gbps support for security devices access including DVRs, NVRs, or VMS servers to record, playback, and archive surveillance video.
- f. The storage system shall be designed with 1 port of SAS wide (x4) connectivity for expansion that allows user to grow video capacity as needed.
- g. The storage system shall be easy to scale up to 224TB through connections with multiple expansion JBOD enclosures.
- h. The storage system shall support up to 2GB controller memory for data cache.
- i. The storage system shall be able to install battery backup unit with the goal of keeping surveillance video data in memory for at least 72 hours when system power loss.
- j. The storage system shall comply with SAS protocol standard.
- k. The storage system shall use a queue limit up to 512 packets.

2 NAS Features

2.1 VessRAID 1000f Series

The storage system shall feature the support of file-based network attached storage (NAS) with advanced video data protection functions. The platform shall:

- a. Support SMB, CIFS, NFS, and FTP file sharing protocols on the standard network.
- b. Include data backup service for users to perform a box-to-box storage volume replication to a remote site through wired network.
- c. Allow users to create a maximum size of storage volume up to 16TB, and total 32 storage volumes per system.
- d. Offer 64 concurrent sessions when storage controller uses 1GB memory, and 128 concurrent sessions when using 2GB memory.
- e. Provide support of Microsoft Active Directory Services that enables administrators to easily assign policies, deploy software, and apply critical updates to an installation.
- f. Include an easy-to-use management software agent that allows administrators to backup/restore data, schedule routine tasks, define user access permission levels, manage share folders, and auto allocate new storage platforms for use without manual IP setup configuration.

2.2 VessRAID 1000i Series

The storage system shall feature the support of file-based network attached storage (NAS) with advanced video data protection functions. The platform shall:

- a. Support SMB, CIFS, NFS, and FTP file sharing protocols on the standard network.
- b. Include data backup service for users to perform a box-to-box storage volume replication to a remote site through wired network.
- c. Allow users to create a maximum size of storage volume up to 16TB, and a total of 32 storage volumes per system.
- d. Offer 32 concurrent sessions when storage controller uses 512MB memory, 64 and 128 concurrent sessions when using 1GB and 2GB memory.
- e. Provide support of Microsoft Active Directory Services that enables administrators to easily assign policies, deploy software, and apply critical updates to an installation.
- f. Include an easy-to-use management software agent that allows administrators to backup/restore data, schedule routine tasks, define user access permission levels, manage share folders, and auto allocate new storage platforms for use without manual IP setup configuration.

3 Operational Features

3.1 VessRAID 1000f/1000i/1000s Series

- a. The storage system shall deliver comprehensive RAID levels protection options flexible for easy configurations while deploying it with recording NVRs, DVRs, or VMS servers.
- b. The RAID level options include 0, 1, 3, 5, 6, 10 (0+1), 30, 50 and 60.
- c. RAID level 5 allows no more than one disk drive failure per logical drive group, and RAID 6 allows two drives failure per group.
- d. The storage system shall provide global or dedicated hot spares function with revertible option that can be assigned to a single drive or a complete RAID set in hopes to recover lost video in time when any of the drives fails.
- e. The storage system shall continue to work without interfering with the video streaming or losing video frames during a RAID array is at the critical, degrade, or rebuild stage.
- f. The storage system shall offer a maximum number of Logical Unit Number (LUN) up to 256 per subsystem and 32 per array.
- g. The storage system shall feature selectable block size options ranging from 64KB to 1MB, and a variable sector size configuration with 512B, 1KB, 2KB, and 4KB options.
- h. The storage system should support the common RAID Disk Data Format (DDF) that defines a standard data structure describing how data is formatted across the disks in a RAID group and allows a basic level of drive interoperability within the same series of storage system enclosures.

4 Management Features

4.1 Operating Systems Compatibility

The storage system shall provide broad interoperability to support standard operating systems environments run by non-proprietary based servers, DVRs or NVRs systems.

These include:

Operating Systems	Type
Windows XP Professional w/ SP2	x64
Windows XP Professional w/ SP3	x86
Windows Server 2003 Enterprise Edition R2 w/ SP2	x86/x64
Windows Vista Enterprise w/ SP1	x86/x64
Windows Vista Enterprise w/ SP2	x86/x64
Windows Server 2008 Enterprise Edition w/ SP1	x86/x64
Windows Server 2008 Enterprise Edition w/ SP2	x86/x64

Windows 7 Ultimate	x86/x64
Windows Server 2008 R2 Datacenter Edition	x64
RedHat Enterprise Linux 5.2	x86/x64
RedHat Enterprise Linux 5.3	x86/x64
RedHat Enterprise Linux 5.4	x86/x64
RedHat Enterprise Linux 5.5	x86/x64
RedHat Enterprise Linux AS 4 Update 6	x86/x64
RedHat Enterprise Linux AS 4 Update 7	x86/x64
RedHat Enterprise Linux AS 4 Update 8	x86/x64
RedHat Enterprise Linux AS 3 Update 9	x86/x64
SUSE LINUX Enterprise Server 9 + SP4	x86/x64
SUSE LINUX Enterprise Server 10 + SP2	x86/x64
SUSE LINUX Enterprise Server 10 + SP3	x86/x64
SUSE LINUX Enterprise Server 11	x86/x64
Netware 6.5 SP8 (Data Drive)	x86
FreeBSD 7.2 (Data Drive)	x86
FreeBSD 8.0 (Data Drive)	x86/x64
Cent OS 5.4	x86/x64
Cent OS 5.5	x86/x64

4.2 Management Tools

- a. The storage system shall provide a friendly graphical user interface tool with highly secured communications protocol protection (SSL) to ensure end-to-end data transit and help encrypting information and providing authentication login over management network.
- b. The user interface should deliver an intuitive and easy-to-use message to the users with comprehensive storage system information, administrative tools, array configuration, and enclosure status for management of the storage platform.
- c. The storage system shall offer SNMP management support to monitor storage system conditions that warrant administrative attention.
- d. The storage system shall include command-line interface (CLI) or command-line user interface (CLU) support over a serial console port to perform system management tasks.
- e. The storage system shall be able to use an LCD display to configure arrays, view events, alter settings and manage overall RAID functions while the Ethernet and serial console ports are not allowed to use due to regulatory or security reasons.
- f. The storage system shall be designed with USB connectivity capability in supporting a

simple USB stick plugging in to eliminate the need of establishing interconnected components to the system for troubleshooting. The USB feature is designed to reduce maintenance complexity and streamline an easier tech support workflow. It performs system information retrieval, firmware auto upgrading, script for quick installation and password resetting.

- g. The storage system shall allow users to power on the entire system to perform a disk-to-disk video backup or restore on a user scheduled basis. As the task completes, it returns to standby mode until the next one starts.

4.3 Management Interfaces and Protocols

- a. The storage system shall support various protocol standards commonly used by non-proprietary servers, DVRs, or NVRs systems for management which may include SNMP, SSL, Telnet, and SLP.
- b. The storage system shall provide Ethernet, serial console and USB connections support for system management.

4.4 Event Notification

The storage system shall include multiple alerting features through email, SNMP, NETSEND, Buzzer, LEDs or LCD control panel to report system health, pre-defined threshold or unexpected failures in an automated fashion.

5 System Architecture

5.1 Mechanical Specification

- a. The storage system shall come with advanced hardware design using 80PLUS-certified power supplies that can help greatly improve power effectiveness and reduce heat generation from the storage system.
- b. The operating temperature of the storage system ranges from 5 to 40°C, and 5 to 35°C if battery backup module used.
- c. The operating humidity of the storage system ranges from 10% to 80% (non-condensing).
- d. The storage system shall support standard 19" rack housing installation and the enclosure depth shall be no more than 500 mm to fit with security deployments that are short of space.

5.2 Environmental Directives & Requirements

- a. The storage system shall conform to the standard EMC/Safety requirements that meet

generic radio interference criteria defined for electrical hardware equipment. These shall include CE (EEA), FCC Class A (USA), VCCI (Japan), BSMI (Taiwan), CB Report, KCC (Korea), C-Tick (Australia), UL/cUL (USA/Canada), TUV (Germany).

- b. The storage system shall be ROHS, WEEE, ISO14001 and REACH compliant, and all the components used within the system shall eliminate the adoption of hazardous materials like Pb, Cd, Br, and Halogens at all levels.

6 Warranty

6.1 Limited Warranty

Promise Technology, Inc. ("Promise") warrants that for three (3) years from the time of the delivery of the storage system to the original end user except for one (1) year warranty on the battery backup unit:

- a. the storage system will conform to Promise's specifications;
- b. the storage system will be free from defects in material and workmanship under normal use and service.

This warranty:

applies only to storage systems which are new and in cartons on the date of purchase;

- a. is not transferable;
- b. is valid only when accompanied by a copy of the original purchase invoice;
- c. is not valid on spare parts.

This warranty shall not apply to defects resulting from:

- a. improper or inadequate maintenance, or unauthorized modification(s), performed by the end user;
- b. operation outside the environmental specifications for the storage system;
- c. accident, misuse, negligence, misapplication, abuse, natural or personal disaster, or maintenance by anyone other than a Promise or a Promise authorized service center.

6.2 Disclaimer of Other Warranties

This warranty covers only parts and labor, and excludes coverage on software items as expressly set above.

Except as expressly set forth above, Promise DISCLAIMS any warranties, expressed or implied, by statute or otherwise, regarding the storage system, including, without limitation, any warranties for fitness for any purpose, quality, merchantability, non-infringement, or otherwise. Promise makes no warranty or representation concerning the suitability of any storage system for use with any other item. You assume full responsibility for selecting storage systems and for ensuring that the storage systems

selected are compatible and appropriate for use with other goods with which they will be used.

Promise DOES NOT WARRANT that any storage system is free from errors or that it will interface without problems with your computer system. It is your responsibility to back up or otherwise save important data before installing any storage system and continue to back up your important data regularly.

No other document, statement or representation may be relied on to vary the terms of this limited warranty.

Promise's sole responsibility with respect to any storage system is to do one of the following:

- a. replace the storage system with a conforming unit of the same or superior product;
- b. repair the storage system.

Promise shall not be liable for the cost of procuring substitute goods, services, lost profits, unrealized savings, equipment damage, costs of recovering, reprogramming, or reproducing of programs or data stored in or used with the storage systems, or for any other general, special, consequential, indirect, incidental, or punitive damages, whether in contract, tort, or otherwise, notwithstanding the failure of the essential purpose of the foregoing remedy and regardless of whether Promise has been advised of the possibility of such damages. Promise is not an insurer. If you desire insurance against such damage, you must obtain insurance from another party.

Some states do not allow the exclusion or limitation of incidental or consequential damages for consumer storage systems, so the above limitation may not apply to you.

This warranty gives specific legal rights, and you may also have other rights that vary from state to state. This limited warranty is governed by the State of California.

6.3 Spare Parts Warranty

Promise does not provide a warranty for spare parts except as set forth expressly herein. Installation of a spare part in a storage system does not affect the product's remaining warranty term. Promise warrants only that all new spare parts will not be DOA. If a new spare part is found to be defective upon receipt, you may contact your local distributor or Promise Technology within thirty (30) days of receipt and obtain a replacement spare part. A copy of the original purchase invoice and the defective part must accompany all such requests for replacement spare parts.

About PROMISE Technology, Inc.

With a long history of innovation, PROMISE Technology develops and manufactures sophisticated RAID solutions recognized worldwide, ranging from a complete line of RAID controller cards to FC/iSCSI/SAS/SATA RAID subsystems. Catering to enterprise, mid-range, entry-level consumer data protection needs, PROMISE products are distinguished by their Unified Common RAID Core and management software and unparalleled support. Headquartered in Milpitas, Calif., PROMISE has operations throughout Asia and Europe. For more information, visit PROMISE Technology's website at www.PROMISE.com.